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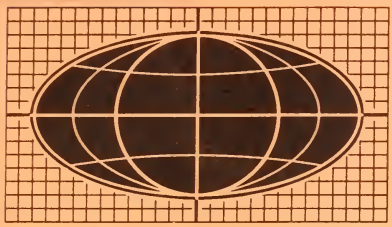

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SUMMARY OF

# " LONG-TERM DEVELOPMENT OF DEMAND AND SUPPLY FOR AGRICULTURAL PRODUCTS in the FEDERAL REPUBLIC OF GERMANY "

U. S. DEPARTMENT OF AGRICULTURE Economic Research Service

# PREFACE

This report is a summary of a comprehensive study, *The Long Term Development of Demand and Supply for Agricultural Products in the Federal Republic of Germany.* (Munich, 1967 ), which is an analysis of factors affecting supply of and demand for agricultural products and their implications for foreign trade. The study was conducted by the IFO-Institut für Wirtschaftsforschung, Munich, Germany, under contract with the U.S. Department of Agriculture. The contract was administered under the supervision of James J. Naive, Europe and Soviet Union Branch, Foreign Regional Analysis Division, ERS. However, the study was conducted independently and the views and results expressed herein are those of the authors and do not necessarily reflect those of the U.S. Department of Agriculture.

This is one of a series of studies made under contract with USDA that analyze the long-term prospects of agricultural supply and demand in foreign countries. Other completed country studies include: Jamaica, Trinidad and Tobago, Leeward Islands, Windward Islands, Barbados, and British Guiana; Venezuela; Mexico; Brazil; Nigeria; Israel; Ghana; Saudi Arabia; Turkey; Republic of South Africa; India; Philippines; Japan; Malaysia; Pakistan; Hong Kong; United Kingdom; Austria; Italy; France; and the Netherlands. Copies of this report and the others listed are available from the Division of Information, Office of Management Services, U.S. Department of Agriculture, Washington, D.C. 20250.

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## CONTENTS


| | Page |
|---|---|
| Summary | iii |
| Introduction | 1 |
| Agriculture in the National Economy | 3 |
| Projection of the National Economy | 3 |
| Future Agricultural Policy | 5 |
| Assumptions on Farm Prices | 5 |
| Projected Demand for Foodstuffs | 7 |
| Assumptions of the EEC Market | 8 |
| Cattle Production | 9 |
| Technological Progress | 10 |
| Projections of Livestock Production | 11 |
| Projections of Crop Production | 13 |
| Projected Feed Supply | 14 |
| Projected Agricultural Imports | 14 |


Washington, D.C. 20250 June 1968

## SUMMARY

These trends are projected for West Germany's agricultural economy in 1960-75:

- Private consumption will increase annually about 5 percent.
- Population will increase annually slightly less than 1 percent.
- Gross agricultural production will increase annually 1.7 percent.

Implicit in these trends is the fact that the growth in demand for agricultural products is expected to exceed the growth of agricultural production and agricultural imports will increase.

The Common Agricultural Policy (CAP) of the EEC will be a major directive in shaping the pattern of future consumption, production, and trade of West German agriculture. Features of the CAP include:

- A common external trade policy on farm products, including tariffs, levies, quotas, and export subsidies.
- Free flow of agricultural products among the EEC country members.
- A common structure of farm product prices, many of which are different from—usually lower than—former prices in West Germany.

The most uncertain aspect of West German agriculture is the future development of the cattle industry, which in itself influences a broad spectrum of agriculture. The uncertainty stems from several conditions:

- Overproduction of dairy products at current price levels.
- A relatively high consumer demand for beef which has led to large imports.

- Predominantly dual-purpose cattle in West Germany (and the EEC) which are raised for both milk and beef (and veal) production.
- Any change in production of either milk or beef whould affect the other: A price increase to stimulate beef production would also stimulate milk production. Conversely, if milk prices were lowered to decrease milk production, then the reduction in cow numbers would ultimately lead to a drop in beef output.

Because of the uncertainty, two alternatives are set forth for the projection period: Cow numbers will not change significantly (Alternative I), or cow numbers will decline by 5 percent (Alternative II).

The following are projected changes from the 3-year period centered on 1961/62 to 1975; where two figures are given, the first refers to Alternative I and the second to Alternative II:

- Milk production will increase 20 or 14 percent. In the former case, there will still be an oversupply problem for dairy products.
- Beef production will increase 45 or 35 percent. There will be a trend toward specialized beef herds. Much of the increased output will be due to substantially heavier slaughter weights.
- Beef imports will remain high—171,000 or 281,000 tons.
- Pork production will exceed domestic consumption by 10 percent resulting in exports of 250,000 tons.
- Wheat production will increase 30 or 37 percent. The portion of domestic production used for livestock feed is expected to increase from 37 to 50 percent.
- Rye production will decline one-third.
- Feed grain production will increase 25 or 28 percent.
- Potato production will decline one-third. The decline will be greater for feed than for food potatoes.
- The gap between feed requirements and feed production will increase.
- Grain imports will increase 3.0 million or 1.8 million tons.
- Oilcake and meal imports will increase 2 million tons; fishmeal imports will increase 500,000 tons.
- Fruit, vegetable, and wine imports will increase substantially, partly because of the free intra-EEC trade.

# Summary of "Long-Term Development of Demand and Supply for Agricultural Products in the Federal Republic of Germany"

By Helmut Schmidt and Romuald Ruf [1]

## INTRODUCTION

There have been several studies on the long-term development of agricultural production in West Germany in recent years. These include:

(1) G. Weinschenck, and G. Scheller. *Voraussichtliche Entwincklung der Nahrungsmittelproduktion in Westdeutschland* (Probable Development of Food Production in West Germany). manuscript, Gottingen, 1959.

(2) R. Plate, E. Woermann, D. Grupe. Agriculture as Part of the Structural Changes in the National Economy. *Agrarwirtschaft* (Agrarian Economy), special issue No. 14, Hanover, 1962.

(3) EEC Commission. *Der Gemeinsame Markt fur landwirtschaftliche Erzeugnisse, Vorausschu 1970* (The Common Market for Agricultural Products, a Preview Leading up to 1970), Agr. Ser., Study Report 10, Brussels, 1963.

This study was undertaken because basic conditions have changed considerably since the earlier studies were conducted. This study is based on the past development of agricultural production, the factors that affected it, and assumptions on the economic, political, and technological conditions affecting future development.

The base period for this study was the average of the three economic years 1960/61, 1961/62, and 1962/63.[2] The investigators had the benefit of the 1960 agricultural census, which was a better statistical base for the determination of past developments than earlier country censuses. It also provided better

[1] The authors are members of the Agricultural Division, IFO-Institut fur Wirtschaftsforschung, Munich, Germany.

[2] The economic year begins on July 1 and ends of June 30 of the following calendar year.

information for evaluating the basic economic policy conditions for future development because of the progress of the Common Agricultural Policy (CAP) of the European Economic Community (EEC). The EEC came into being in 1958 and the first elements of the CAP became effective in 1962.

The EEC includes not only agricultural regions with differing structural characteristics and differing capacities, but nations where agricultural development was influenced by differing agricultural policies. In the future, competition within the EEC under a uniform agricultural policy and price level will require that national agricultural economies adjust toward products for which they have a comparative advantage within the Community, perhaps developing in quite different directions than in the past. Therefore we must clarify the competitive position of German agriculture within the EEC.

The postwar recovery period also required the use of a methodology that was not necessarily related to historical trends. Thus, it appeared that total or only slightly differentiated trend extrapolation would have to be ruled out. But the same considerations also seemed to restrict the use of an econometric model because the important interrelationships cannot be based on historical trends. Therefore we used a method that does not employ the mathematical formulation of factor relationships, but subjectively evaluates factors and the likely results of their combination. Trend extrapolations and econometric methods were applied only to sectors where it could be assumed that the criteria for past development would be relevant in the future. The mathematical results in this connection, however, were subjected to a general acceptability test and if necessary they were revised.

The projection method used did not offer any possibility for estimating ranges, and the possibilities for making alternate assumptions were extremely limited. For many commodities, there was a considerable margin of uncertainty and making assumptions was unavoidable.

Alternative assumptions were made for the number of milk cows: First, no change in cow numbers (Alternative I) and, second, a decrease of 5 percent in cow numbers (Alternative II). The number of cows influences a broad area of agricultural production, but the change in cow numbers is extremely difficult to project because the complexity of the many influencing factors.

A projection of one or several economic magnitudes is always a limited forecast. It is an attempt to project under certain presupposed conditions. Therefore, these conditions should be as realistic as possible. Consequently, the results of the projection tell very little unless evaluated in connection with the basic assumptions. The main emphasis in any projection thus should be the bases for the estimates.

## AGRICULTURE IN THE NATIONAL ECONOMY

The agriculture of West Germany is an expanding industry, involving some specialization of labor and relatively high productivity. Within this overall framework, the following phenomena are important to agriculture's position in the economy:

- Competition with other sectors of the economy for labor and capital forces agriculture to improve production efficiency.
- High levels of development of farm machinery, agricultural research, and agricultural education are prerequisites for the dissemination and utilization of technological progress.
- In a tight labor market, other sectors offer agricultural labor good alternatives for other income and job possibilities. Therefore, more and more small farmers are switching to other trades as their main job and operating their farms as a secondary occupation or leaving farming entirely.
- High farm wages constitute a substantial cost for larger enterprises which require much labor. This is why agricultural production is becoming concentrated in medium-size family farms with full-time operators who derive all of their livelihood from farming.
- A high and growing income level is an important factor in determining the demand for food. As consumers' quality demands rise, livestock products assume more significance.

Agricultural income is relatively low in Germany; agricultural policy has generally been directed to improving farm income through various programs.

## PROJECTION OF THE NATIONAL ECONOMY [3]

The projections of the national economy were based on real 1954 prices. The most important premise was the continuance of full employment. The growth trend in real social product (GNP) was projected—a trend determined by investigation. In this investigation, the employment potential and the production facilities available were, as usual, weighted heavily but only to the extent that seemed reconcilable with economic stability. It was assumed that there would be no major changes in the international political situation, the balance of payments, the rates of exchange, and the international competitive capability of German products.

[3] This section was prepared under the direction of Herbert Hahn, General Economic and Trend Survey Division, IFO.

The German population is expected to grow from 56.2 million in mid-1961 to 61.7 million in 1970 and 63.7 million in 1975—increases of 10 and 13 percent. The national labor force should continue to decrease until 1970. The trend of the 1950's is expected to accelerate because fewer young people are at the age for entering the labor force as a result of a sharp decrease in births during the late forties and an extension in the age for mandatory school attendance. Further, the 40-hour week is not expected in industry until 1970. In the last 5 years of the projection, the number of employed persons will increase, but work week reductions will occur only in the services sector.

The labor shortage and the trend toward fewer working hours will furthermore lead to much greater emphasis on investments to increase productivity. The increasing competition from other countries, particularly those in the EEC, will also stimulate an increase in productivity. As in the past, the high-productivity areas of the national economy will have the highest growth rate and their portion of the total volume will increase (table 1).[4]

On the basis of these considerations, the projected productivity growth rates during the 1960's and between 1970 and 1975 will be only a little lower than those of the early 1950's.

The 1975 gross domestic product (GDP) in 1954 prices is projected to increase to 508 billion Deutsche marks (DM).[5] As a result, the GDP would double during 1960-75; it doubled in the decade before 1960. The growth rate would drop but would still be high. When the labor shortage ends—around 1970—the GDP growth rate may increase.

The volume of Government consumption, particularly of armaments, was projected to increase substantially, beyond the mid-sixties. High growth rates for equipment investment are expected in this period, because of the lack of manpower. The growth in construction is determined by the increasing rate of repairs and remodeling of old housing units and the increase in industrial construction.

Against this background, we estimated private consumption necessary for the projection of food requirements. We assumed that the volume of consumption would increase somewhat faster than the GNP, in contrast to the development during the 1950's. In 1960, private consumption accounted for 59.2 percent of the GNP; for 1975, it is projected to account for 61 percent.

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[4] Tables are grouped at the end of the report, starting on p. 16.

[5] In 1954, 1 DM = $0.238; currently, 1 DM = $0.250.

## FUTURE AGRICULTURAL POLICY

The most important aspects of agricultural policy during the projection period will be determined not on a national but on the EEC level. The objectives of the Common Agricultural Policy of the EEC were spelled out in the Rome Treaty of 1957. These objectives generally attempt to guarantee farm income. This is to be achieved through an increase in agricultural productivity, agricultural price supports, and sales promotion.

The measures for promoting productivity can be outlined only generally. They extend over the entire area of structural improvements in agriculture in the broadest sense of the term. The agricultural policy of the Community in this connection will merely outline the framework within which the national governments will have a comparatively broad leeway. In general, the individual farm enterprise will be more heavily emphasized than in past agricultural policy in West Germany. Aid given without regard to the income differences within agriculture will be replaced by specific measures, such as those described below, oriented toward the economic improvement of the individual enterprise.

Prices and sales are already regulated for major agricultural products by the CAP, which grants member's goods preference over imports from third countries. The level of EEC agricultural prices has also been determined. These prices are assumed to be set as high as possible, in view of the guaranteed farm income objective. The level could reach an upper limit where prices might create overproduction, and possibly cause a simultaneous reduction in consumption. We assume, however, that the CAP will try to prevent the buildup of surpluses of farm products. This will apply primarily to perishable agricultural commodities—especially livestock products. Exporting surpluses generally necessitates costly export subsidies, since EEC prices are usually higher than world prices.

The CAP is expected to help achieve self-sufficiency in farm products where adequate capacities exist or can be built up. In this way, the increase in the demand for food will become decisive in determining production, particularly for livestock products.

## ASSUMPTIONS ON FARM PRICES

The projections of food requirements were based on the projection of the GNP and private consumption under assumed constant (1954) real prices. But this assumption was not realistic for the projection of agricultural production. The pattern of agricultural production is generally determined by the price relationships between the various products. However, the Common Market

established a new structure of farm prices. A projection which is not in line with the EEC price schedule would therefore have been unrealistic.

To give proper consideration to the postulate of constant prices in the overall economy, the following assumptions were made for farm prices.

Grain and milk prices, which in German agriculture function as "cornerstone" or basic prices, were taken at the level determined at the beginning of the CAP and held constant for the projection period.

Projected prices for other products, including potatoes and sugar beets, which directly or indirectly are related to the cornerstone prices, were derived from the constant cornerstone prices on the basis of the expected market situation under the CAP. The resulting detailed price assumptions were:

The price support for feed grains will almost reach the level of the officially fixed price. Conversely, the wheat surplus will reduce the wheat price to approximately the "intervention" (support) price.

EEC products made from grain will probably supply demand within the Community. A heavy demand over time for these products was assumed. The drop in feed grain prices probably will not help German livestock farmers, because of low EEC livestock prices; benefits will be passed on to consumers of livestock products. Price relationships between feed grains and livestock products will be narrow; we assumed that, for slaughter hogs, the ratio would be 100 : 650 and 100 : 675. The price ratio for eggs might drop to the low level of 100 : 730, which now applies in the Netherlands. Slaughter poultry also has an assumed depressed price ratio: 100 : 600.

EEC prices for slaughter cattle will probably be guided by the need to stimulate beef production; the EEC Commission believes that a beef-milk price ratio of 750 : 100 would accomplish this end. Such a policy, of course, will have limitations because a sharp increase in beef price will cause a curtailment in consumption. There is overproduction of milk products in the EEC. A cutback in milk production cannot be achieved solely through a reduction in the producer price for milk. A cautious beef price policy would also have to work along the same lines. On this basis, the price ratio between beef and milk in the EEC is assumed not to exceed 700 : 100 in the long run.[6]

[6] The EEC has announced increased target (or guide) prices for beef cattle and calves effective April 1, 1968, which brings the beef milk ratio to 700 : 100.

## PROJECTED DEMAND FOR FOODSTUFFS [7]

The projection of food demand was based on a time series analysis of per capita consumption as related to per capita expenditures and the deflated price of closely related substitutes. An income elasticity was calculated for determining consumption, which in most products explained more than 70 percent of the variation in consumption. The projection was therefore a function of income, assuming constant real prices.

The plausibility of these assumptions was tested by comparing a projection for the end of the 1950's with the actual number. We were able to determine the extent to which the original assumptions of the projection were justifiable and whether the income elasticities were applicable. During the years studied in the earlier projection, the income elasticity figures gave good overall results. The projection of only a few items under constant real prices had to be altered in line with the assumed farm prices (table 2).

The assumed rising slaughter cattle prices contrast with the assumed stable prices for slaughter hogs. Because production of both types of meat is expanding equally, increased producer prices for each are bound to be reflected in consumer prices. Therefore, some of the projected beef demand will probably be replaced by pork. Although the past cross-price elasticity for pork was insignificant, we assumed that 3 kilograms of the beef consumption per person would be replaced by pork by 1975. Statistics for the 3 years before 1964-65 upheld this assumption by showing that high beef prices can increase substitution between the two types of meat.

The farm price adopted by the EEC for milk matches the past German price, but the German policy provided some direct support, while the CAP does not. Germany therefore faces a retail price rise of 18 percent, compared with 1966. German dairies are oriented toward production of butter rather than fluid milk—only about 20 percent of all milk delivered is for liquid consumption. But the desired market price cannot be achieved through price increases on dairy products for which the price elasticity of demand is relatively low—as is the case for whole milk. During the sixties, per capita butter consumption decreased in all countries with high butter consumption. On the basis of this consideration, the butter requirement per capita during the projection period was assumed to remain unchanged from the level of 1964-65. Even this presupposes that the effect of the high milk price upon the butter price will be reduced somewhat during the first years of the Common Market through consumer price subsidies.

[7] The projection of the demand for foodstuffs was prepared by H. Gollnick and P. Maciej of the University of Hamburg.

## ASSUMPTIONS OF THE EEC MARKET[8]

Demand determines the production of pork, eggs, poultry, fruits and vegetables, and sugarbeets to a large extent. If we assume that the EEC becomes self-sufficient in these commodities, we must project the competitive position or market share of Germany for them.

Hog production traditionally has a strong position in German agriculture as well as in the Netherlands and Belgium. Production technology is relatively high in areas of northern Germany, so German hog production is in a good competitive position in the Common Market. This position is supported by the fact that the German producers, like the Dutch, have a relatively low hog-feed grain price ratio. This ratio is considerably greater in France and Italy, but it will be cut back in these countries because of rising feed costs. This will tend to restrict hog production in these countries, at least during the first years. In West Germany and in the Netherlands, on the other hand, EEC prices will stimulate increases in hog numbers. Also, the unfavorable price ratios between bread grains and purchased feed grains in grain-surplus areas of West Germany which are far from the market will provide an incentive for feeding German-grown grain. We therefore assumed that the feeding of domestically produced wheat and rye to livestock can be increased considerably during the projection period; this in turn will stimulate hog production.

Considering these factors, it was assumed that the market for German slaughter hogs can expand to about 110 percent of domestic requirements. The 10 percent above domestic requirements could be exported.

A similar situation for egg production exists in the EEC, but Germany and the Netherlands, both with low egg-feed grain price ratios, probably cannot increase their sales of eggs to other partner countries. Poultry raising is best suited to large, intensive production units that are highly efficient. The conversion to intensive large-scale production is in full swing in all EEC countries. All countries entered the CAP with their domestic production largely filling their domestic requirements. German production has almost achieved this volume under the protection of the EEC market system. Since a change in this regional market structure cannot be projected, we assume that German egg production will equal domestic demand for the projection period.

German production supplies 42 percent of domestic poultry meat requirements. Any stockpiling of poultry will depend on an increase in

[8] Since the study was prepared, some agricultural price-policy adjustments have been made by the EEC Council of Ministers. For details on these adjustments see: Reed E. Friend and Robert E. Shepherd, "EEC Sets Higher Farm Prices", Foreign Agriculture, January 15, 1968.

slaughterhouse and storage plant capacities. Under the conditions of full competition within the EEC, investments in these facilities will be riskier than in the past. We assumed that German poultry production will not rise above 70 percent of domestic requirements. Because the share of the total domestic supply has remained unchanged in recent years, even the 70 percent share may not be attained.

German fruit and vegetable output must compete with that in other EEC countries which is superior either because of better climate or production techniques.[9] Domestic fruit and vegetable production has been constantly losing ground to imports. Because of the many types of fruits and vegetables and their specific production and market conditions, we could not quantify the future German competitive position. Domestic production was assumed constant; increased consumption will be supplied by imports from the EEC.

EEC sugarbeet production is not controlled through prices, but by national quotas. Consequently, there will be little shift from past market percentages, and we assume that production will meet domestic demand for sugar.

## CATTLE PRODUCTION

Cattle production is influenced not only by the demand for milk products but also for beef. The long-term outlook is for continuing substantial import requirements for the EEC. Beef production will be stimulated by the fact that beef is one of the few products that will be deficient in supply throughout the projection period. Also EEC agricultural policy will aim to stimulate beef production through price incentives.[10] But any expansion in beef production by increasing numbers of dual-purpose cows would also increase milk production, and aggravate the EEC milk surplus. This problem cannot be avoided by increasing the price ratio between milk and slaughter cattle as a matter of policy. The profitability of cattle depends on milk output per cow. Raising beef cattle on the range and feeding to slaughter weights in feedlots, as is done in the United States, would be impractical in EEC countries. The number of cows that can supply EEC milk requirements limits beef production. Price policy can control beef production only if market prices of both milk and beef are moving in the same direction. With the anticipated lack of growth in the milk market, future price policy could not cause an increase in cow numbers in Germany.

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[9] "The German Vegetable Market in the EEC," Ifo-Schnelldienst, Vol. 1966, No. 28, pp. 10 ff.

[10] The EEC announced increased target (or guide) prices for beef cattle and calves, effective April 1, 1968.

The size of cow herds will be determined by structural changes in milk production. The relatively high wages of dairy farmworkers will tend to cause the discontinuance of milk production on some farms. If the milk price of the CAP is not maintained, this trend might speed up. On smaller farms, the transition to off-farm employment will continue. This will include some farms larger than 10 hectares; many herds will be eliminated. [11]

If total cow numbers remain the same, herd sizes would increase on middle- and large-sized farms—those with 15 to 30 hectares. Most of the available barn capacity for cows on these farms is now fully used. Expansion of barn capacity would usually require extensive remodeling or new construction. Financing such construction, however, could reduce the returns resulting from the larger herds. Conversion or new construction will probably be determined by the type and volume of government subsidies, and efficient use of investments will be the main consideration.

At this time, we cannot project the net direction of these trends. The number of milk cows was the starting point for the entire study, so we used the two alternatives describer earlier.[12]

## TECHNOLOGICAL PROGRESS

The competition for production factors within the German economy and within the EEC forces agriculture to make good use of technology. Technological progress involves, primarily, increasing output per production unit. These relationships seem most susceptible to a trend extrapolation. But only in a very few instances can the values determined in this way be used intact. In most cases they were revised after considering their general plausibility.

The projection of harvest yields started from a linear trend on the basis of a long reference period, 1921-49. It was impossible to use the postwar period alone as a basis for projection because increases in yields were abnormally high, so that extrapolation would have been unrealistic (table 3).

The rather moderate upward trend of the time series likewise frequently turned out to be too steep. For instance, the projected wheat yield for 1975 was set below the trend value because high-quality wheat, which has lower yields, will gain significance in total output, and because of an anticipated increase in wheat cultivation on marginal soils.

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[11] In this report, farm size refers to agricultural area.

[12] See the Introduction and footnote 3.

The statistics of home-grown feed production are extremely questionable as no reliable data are collected. Therefore, home-grown feed production is estimated as a residual from the overall feed requirement after deducting commercial feed. Since 1950 there has been no consistent trend in yield from both pasture and forage crops. The need for increasing yields of these crops has obviously been less necessary than for grain. For the projection period, we anticipate a stronger incentive for increasing yields. The 10-percent increase in the average yields in forage production assumed for the projection period is mainly accounted for by an expected increase in corn silage.

The projection of average livestock yields had to be based on considerably more individual considerations. Trend extrapolations of any kind were rarely meaningful.

For cattle, projections were based on two fundamental assumptions:

(1) That dual-purpose cattle will continue predominant in West Germany; and

(2) That there will be a further increase in the meat output from farms specializing in beef production. This increase will not take place at the expense of milk output, but it will parallel a further increase in milk output.

First, a trend extrapolation was used for projecting the annual milk output per cow because the increase has been continuous. This gave an annual yield of 4,456 kilograms per cow—far above the level in the Netherlands, which has been about 4,200 kilograms since 1960. But Holland has the highest average milk output in the world for dual-purpose cattle, and it is improbable that the German yield will top that level. For 1975, we therefore assumed an output of 4,100 kilograms—a level which is already being achieved in the best German herds. The productive life of cows was left constant at 5.7 years.

## PROJECTIONS OF LIVESTOCK PRODUCTION

On the basis of our assumptions we projected an increase in the number of cattle; under Alternative I, there would be 2 million cattle; under Alternative II, there would be roughly 1 million cattle. Cattle fattening will become increasingly independent of the domestic feed base. In other words, feed production will not restrict the increase in the number of cattle (table 4).

Total milk output is projected to increase 20 percent or 14 percent, depending upon the assumption for cow numbers (table 5). The increase will not be as great as it was during the 1950's. Milk utilization will encounter difficulties, especially in the case of the higher rate of output increase. Almost

two-thirds of the milk supplied to dairies is currently processed into butter; this market is oversupplied. Although the dairy market structure makes it difficult to redirect production, the market situation will nevertheless force greater emphasis on cheese production. Nevertheless, assuming that the number of cows remains constant (Alternative I), a butter surplus of 71,000 tons in 1975 is expected, even if the milk fat content increases only slowly (table 9). The basic assumption—that the CAP will not lead to permanent market surpluses—must be applied to butter. Great Britain is the only country outside the EEC that imports large quantities of butter. Looking from this angle, the development of cow herds would probably move in the direction of Alternative II (declining numbers), unless the Community decides to step up its international food aid program by using more powdered whole milk.

As a result of the increase in the number of cattle and herds specializing in beef production and the increase in the average slaughter weight, beef production will increase from 1960-62 to 1975 by 45 percent (Alternative I) or 35 percent (Alternative II). This corresponds roughly to the increase from 1950 to the base period. The only difference then was that the increase in cow numbers helped to increase meat production, whereas in the future, the production increase will be determined solely by specialization and increased efficiency.

Despite the projected increase in beef production, it will not meet domestic requirements. Imports are projected at 171,000 tons under Alternative I and 281,000 tons under Alternative II. These projections are based on the assumption that domestic producer prices will increase only moderately.

The basic assumption—that pork production will reach 110 percent of domestic requirements during the projection period—implies that by 1975 hog numbers will increase almost 44 percent over the base level. This estimate includes the assumption that the pasture rotation periods in hog fattening will be further reduced, and there will be a decrease in the average slaughter weight from 89 kilograms to 85 kilograms.

On the basis of domestic egg requirements—where it was assumed that, starting in 1970, 100 percent of this requirement would be met from domestic sources—the number of laying hens would have to increase considerably. This development can be expected primarily during the late 1960's so that, during the following 5-year period, a slowdown in the rate of increase is expected.

The assumption that 70 percent of the domestic poultry meat requirement could be supplied from German production during the projection period would necessitate an elevenfold increase in poultry numbers over the base period. The situation at the beginning of the CAP, however, makes it appear doubtful that

this rapid an increase in numbers could occur. Nevertheless, poultry production will be the most rapidly expending agricultural production sector during the projection period.

## PROJECTIONS OF CROP PRODUCTION

In most projection studies, it is assumed that the volume and utilization of the agricultural area will remain the same, but this assumption was not used in this study.

During the fifties, major changes in the pattern of land utilization were observed. Since 1956 total agricultural area has been decreasing. If we extrapolated from the base period of 1960-62 to 1975, the area would decrease by more than 400,000 hectares. The decrease observed during the base period, however, was mostly due to the transfer of land to nonagricultural uses. The increasing abandonment of marginal land for agricultural use, however, makes an increase in this trend quite possible (table 6).

We therefore projected a decrease in the agricultural area of about 700,000 hectares by 1975. Since the ratio between crops and grassland will change—primarily due to increasing mechanization—this area reduction will mainly involve cropland. Pastures will decrease by 100,000 hectares (table 6).

The area for barley and wheat is projected to increase but it will decrease for potatoes, forage crops, and rye. The forage crop area would be reduced further under Alternative II; the area thus released would go into grain. If this should occur, the decrease in the potato area would probably be less. If the grain area were expanded to the upper limit, there would be no alternative crop but potatoes.

The total grain area by 1970 and 1975 would increase by almost 100,000 hectares and 200,000 hectares, respectively. Grain would then account for 60 and 72 percent of total cropland, respectively; in other words, there would be a shift from the traditional three-crop rotation system. Recently, it was considered impossible to maintain such high-intensity grain cultivation on light soils over a long period. But the degree to which intensive grain production is now practiced is indicated by State averages for Lower Saxony and North Rhine Westphalia, where the grain area already accounts for more than 70 percent of the total cropland. The West German average in 1966 was around 65 percent (table 7).

Under these assumptions, wheat production by 1975 will increase roughly 30 percent (Alternative I) or 37 percent (Alternative II). The portion of

domestic wheat fed is expected to increase from 37 percent for the base period to 50 percent in 1975. Nevertheless, the portion of output used for milling will increase. Here we are assuming that domestic production of high-quality wheat or a general improvement in domestic milling-wheat quality will replace about half of the wheat which is now imported to improve flour quality.

Rye production will decline by one-third. Here again it is expected that more rye will be fed, which will increase the import requirements of rye for human consumption.

An anticipated increase in grain production for feed and industrial uses is based primarily on the expansion of spring barley. The increase probably will be used more for feed than for brewing.

Potato output will probably decrease by one-third; the rate of decline will be less for potatoes for food than potatoes for feed. Early potatoes will be extensively displaced from the domestic market by other EEC growers. In other words, German production is not expected to compete with areas that have more favorable weather.

## PROJECTED FEED SUPPLY

A comparison of the projected crop and animal output shows a considerable increase in the feed gap (table 8). This is expected for the following reasons:

(1) A substantial increase in the number of hogs, broilers, and laying hens; a rapid decrease in the use of potatoes for livestock feeding;

(2) A decline (area of feed crops) which will not be offset by the yield increases;

(3) An increase in the protein feed requirement for cattle. and

(4) A relatively small increase in fodder beet production.

## PROJECTED AGRICULTURAL IMPORTS

The most decisive changes in agricultural trade will occur in livestock feeds (table 9).

The grain import requirement during the projection period will probably increase by about 3 million tons to 8.3 million tons, under Alternative I. But even if the number of cows were to decrease (Alternative II), grain imports

would increase by 1.8 million tons. At the same time, the oilcake and meal import requirement will increase by about 2 million tons–to double the current figure. The import requirement for fish and meat meal will increase by 500,000 tons–almost 300 percent. Fish and meat meal can, under certain circumstances, be partially replaced with oilcake.

The import requirements for vegetables, fruit (including tropical fruit), and wine will also increase substantially if the projected consumption is fully covered by imports.

For livestock products, the net import requirements for beef, poultry, and cheese will probably be about the same as in the past. However, recent developments indicate that the import gap for beef might be smaller and for poultry somewhat larger than projected. Furthermore, there are good reasons for expanding hog production beyond domestic requirements. Germany will be a net exporter of livestock products.

Table 1.--West Germany: Gross domestic product by sector and gross notional product by use, selected years

| Sectors and uses | Excluding Saarland and West Berlin | | | Including Saarland and West Berlin | | | |
|---|---|---|---|---|---|---|---|
| | 1950 | 1955 | 1960 | 1960 | 1965 | 1970 | 1975 |
| | *Billion Deutsche Marks*[1] | | | | | | |
| **Gross domestic product** | | | | | | | |
| Agriculture and forestry | 11.6 | 13.7 | 15.9 | 16.1 | 16.7 | 19.1 | 20.6 |
| Producing trades [industry] | 53.4 | 95.7 | 133.2 | 141.9 | 186.4 | 232.1 | 312.1 |
| Manufacturing | | 76.0 | 107.2 | 114.4 | | 185.3 | 247.7 |
| Construction | 5.9 | 10.8 | 13.5 | 14.2 | 18.4 | 23.4 | 30.4 |
| Mining and quorrying | | 8.9 | 12.5 | 13.3 | | 23.4 | 34.0 |
| Commerce | 15.3 | 22.2 | 32.1 | 34.0 | 43.3 | 54.5 | 67.2 |
| Transportation | 8.1 | 11.8 | 15.3 | 16.0 | 18.4 | 21.3 | 25.4 |
| Services[2] | 13.1 | 19.8 | 26.6 | 28.3 | 35.6 | 44.3 | 56.1 |
| Generol government[3] | 11.4 | 14.1 | 17.3 | 18.7 | 23.9 | 24.8 | 26.6 |
| Totol | 112.8 | 177.3 | 240.3 | 255.0 | 324.3 | 396.1 | 507.9 |
| **Gross national product** | | | | | | | |
| Private consumption | 69.0 | 104.5 | 142.3 | 152.4 | 199.1 | 242.5 | 313.1 |
| Public consumption | 17.4 | 23.0 | 30.7 | 32.8 | 45.5 | 61.8 | 79.0 |
| Installotion investments | 21.8 | 39.5 | 56.9 | 60.0 | 85.5 | 102.7 | 137.5 |
| Equipment | 11.2 | 21.3 | 31.3 | 32.9 | 49.0 | 58.1 | 78.5 |
| Buildings and structures | 10.6 | 18.1 | 25.6 | 27.1 | 36.5 | 44.6 | 59.0 |
| Changes in stocks | +3.9 | +5.5 | +7.7 | +8.2 | +6.0 | +8.0 | +11.3 |
| Foreign transoctions | +0.8 | +4.4 | +2.8 | +1.5 | −12.8 | −15.0 | −27.9 |
| Total | 112.9 | 176.9 | 240.4 | 254.9 | 323.2 | 400.0 | 513.0 |
| Exports | 13.6 | 36.3 | 65.7 | 59.3 | 82.8 | 121.3 | 179.9 |
| Imports | 12.8 | 31.8 | 62.9 | 57.8 | 95.6 | 136.3 | 207.8 |

[1] At 1954 prices.
[2] Including banks and insurance companies.
[3] Including notionol defense as well as nonprofit orgonizations.

Table 2.--West Germany: Annual consumption of major foods, averoge 1961/62-1963/64 (base period), 1964/65 ond 1970 and 1975 projected

| Food | Per capita | | | | Total | | | | Changes in totol consumptian compored with base period | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Base period | 1964/65 | 1970 | 1975 | Base period | 1964/65 | 1970 | 1975 | 64/65 | 70 | 75 |
| | *Kg. per capita* | | | | *1,000 tons* | | | | *Percent* | | |
| Wheat[1] | 69.4 | 66.0 | 61.5 | 57.8 | 3,972.3 | 3,872.0 | 3,779.0 | 3,672.1 | −1.4 | −3.8 | −6.5 |
| Rye[1] | 26.6 | 23.4 | 20.3 | 17.7 | 1,504.0 | 1,371.0 | 1,247.4 | 1,124.5 | −8.8 | −17.1 | −25.2 |
| Barley[1] | 28.0 | 32.2 | 35.9 | 40.6 | 1,584.0 | 1,891.0 | 2,205.9 | 2,579.4 | 19.4 | 39.3 | 62.8 |
| Oats | 2.4 | 2.3 | 2.6 | 2.8 | 134.3 | 134.0 | 159.9 | 177.9 | −0.2 | 19.0 | 32.5 |
| Corn[1] | 5.5 | 6.9 | 6.7 | 7.3 | 315.3 | 406.0 | 411.7 | 463.8 | 28.8 | 30.6 | 47.1 |
| Rice | 2.0 | 1.9 | 2.0 | 2.0 | 111.0 | 113.0 | 122.9 | 127.1 | 1.8 | 10.7 | 14.5 |
| Pulses | 1.6 | 1.4 | 1.6 | 1.6 | 88.0 | 86.0 | 98.3 | 101.7 | −2.3 | 11.7 | 15.6 |
| Potatoes[1] | 137.4 | 125.3 | 100.0* | 90.0* | 7,779.0 | 7,350.0 | 6,141.7 | 5,717.9 | −5.5 | −21.0 | −26.5 |
| Sugar | 30.3 | 30.0 | 31.5 | 32.2 | 1,717.7 | 1,761.0 | 1,935.6 | 2,045.7 | 2.5 | 12.7 | 19.1 |
| Vegetables | 47.4 | 48.6 | 47.1 | 47.8 | 2,679.7 | 2,849.0 | 2,894.2 | 3,036.8 | 6.3 | 8.0 | 13.3 |
| Fruit | 72.4 | 64.9 | 76.1 | 82.0 | 4,094.2 | 3,808.3 | 4,676.1 | 5,209.6 | −7.0 | 14.2 | 27.2 |
| Citrus fruit[2] | 15.2 | 17.5 | 18.1 | 19.8 | 861.3 | 1,026.0 | 1,112.2 | 1,257.9 | 19.1 | 29.1 | 46.0 |
| Fats and oils[3] | 12.3 | 12.7 | 12.3* | 12.3* | 697.7 | 740.0 | 755.8 | 781.4 | 6.1 | 8.3 | 12.0 |
| Wine and wine products[4] | 15.5 | 16.8 | 19.9 | 22.8 | 8,764.3 | 9,865.0 | 12,228.0 | 14,485.3 | 12.6 | 39.5 | 65.3 |
| Beef | 18.5 | 19.0 | 22.3* | 23.7* | 1,048.3 | 1,116.0 | 1,370.3 | 1,505.7 | 6.5 | 30.7 | 43.6 |
| Veal | 1.9 | 1.8 | 1.9 | 1.9 | 110.0 | 104.0 | 116.7 | 120.7 | −5.5 | 6.1 | 9.7 |
| Pork | 31.2 | 33.7 | 36.1* | 39.5* | 1,764.0 | 1,974.0 | 2,218.2 | 2,509.5 | 11.9 | 25.7 | 2.3 |
| Poultrymeat | 5.0 | 6.0 | 7.4 | 8.6 | 284.3 | 350.0 | 454.7 | 546.4 | 23.1 | 59.9 | 92.2 |
| Eggs[5] | 229 | 234 | 254 | 266 | 12,924.0 | 13,696.0 | 15,607.5 | 11,899.5 | 6.0 | 20.8 | 30.8 |
| Milk[6] | 137.1 | 132.6 | 137.1 | 137.1 | 7,755.0 | 7,146.0 | 8,424.4 | 8,710.2 | −7.9 | 8.6 | 12.3 |
| Whey cheese and fresh cheese | 2.7 | 3.1 | 4.0 | 4.7 | 155.0 | 183.0 | 245.8 | 298.6 | 18.1 | 58.6 | 92.6 |
| Cheese | 4.5 | 4.7 | 4.8 | 4.9 | 257.3 | 277.0 | 294.3 | 311.3 | 7.7 | 14.6 | 21.0 |
| Whole milk, powdered | 0.8 | 1.0 | 1.3* | 1.6* | 46.7 | 59.0 | 79.9 | 101.7 | 26.3 | 71.1 | 117.8 |
| Butter[7] | 8.8 | 8.5 | 8.5* | 8.5* | 497.0 | 497.0 | 522.3 | 540.0 | 0 | 5.1 | 8.7 |

[1] Including industriol consumptian.
[2] Net imports.
[3] In terms of pure fat, including animal fats.
[4] Liters per capita and 1,000 hectaliters.
[5] Eggs per capito ond million eggs.
[6] Including creom, curdled milk products, evoporated ond condensed milk, skim and buttermilk (in whole milk equivolent).
[7] In terms of product weight.
(*) Revised in terms of constont real prices.

Table 3.--West Germany: Crop and livestock yields, average 1961/62 - 1963/64 (base period), 1964/65 and 1970 and 1975 projected

| Commodity | Unit | Base period | 1964/65 | 1970 | 1975 |
|---|---|---|---|---|---|
| Wheat | 100 kg. per ha. | 33.1 | 36.0 | 36.5 | 38.5 |
| Rye[1] | do. | 25.7 | 31.5 | 30.5 | 32.0 |
| Summer barley | do. | 29.0 | 32.4 | 33.5 | 35.0 |
| Winter barley | do. | 32.8 | 38.0 | 38.5 | 40.0 |
| Edible pulses | do. | 20.1 | 20.6 | 21.0 | 22.0 |
| Early potatoes | do. | 158.9 | 187.3 | 180.0 | 180.0 |
| Late potatoes | do. | 244.3 | 246.2 | 270.0 | 280.0 |
| Sugar beets | do. | 368.0 | 393.1 | 415.0 | 430.0 |
| Fodder crops[2] | Starch units[4] per ha. | 26.8 | 23.9 | 28.3 | 29.5 |
| Permanent grassland I[3] | do. | 21.6 | 19.2 | 23.3 | 24.3 |
| Permanent grassland II[3] | do. | 21.6 | 19.2 | 23.2 | 24.1 |
| Milk | kg. per cow per yr. | 3,418 | 3,614 | 3,900 | 4,100 |
| Egg[3] | eggs per hen per yr. | 152 | 185 | 200 | 210 |
| Average slaughter weight[5] | | | | | |
| Beef cattle | Kg. | 266 | 268 | 281 | 295 |
| Calves | do. | 50 | 59 | 68 | 75 |
| Hogs | do. | 89 | 90 | 87 | 85 |

[1] Including winter meslin. [2] Including feed root crops. [3] For alternatives I and II see text.
[4] A starch unit is equivalent to the net energy of 1 gram of starch. [5] Including slaughter fats.

Table 4.--West Germany: Livestock numbers and units[1], average 1961/62 - 1963/64 (base period), and 1970 and 1975 projected

| Livestock class | Base period | | 1964 | | 1970/I | | 1970/II | | 1975/I | | 1975/II | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Actual | Live stock units | Actual | Live stock units | Actual | Live stock units | Actual | Live stock units | Actual | Live stock units | Actual | Live stock units |
| | *1,000 head* | | | | | | | | | | | |
| Cattle: | | | | | | | | | | | | |
| Under 1 year | 4,191 | 1,257 | 4,226 | 1,268 | 4,706 | 1,412 | 4,485 | 1,346 | 5,046 | 1,514 | 4,706 | 1,412 |
| 1-2 years | 2,218 | 1,553 | 2,163 | 1,514 | 3,034 | 2,124 | 2,873 | 2,011 | 3,281 | 2,297 | 3,047 | 2,133 |
| 2 years old and over | 6,755 | 6,768 | 6,664 | 6,674 | 6,799 | 6,807 | 6,574 | 6,582 | 6,794 | 6,801 | 6,457 | 6,464 |
| Of which: | | | | | | | | | | | | |
| Cows and heifers | 6,545 | 6,545 | 6,470 | 6,470 | 6,621 | 6,621 | 6,396 | 6,396 | 6,621 | 6,621 | 6,284 | 6,284 |
| Oxen and bulls | 210 | 223 | 194 | 204 | 178 | 186 | 178 | 186 | 173 | 180 | 173 | 180 |
| Subtotal | 13,164 | 9,578 | 13,053 | 9,456 | 14,539 | 10,343 | 13,932 | 9,939 | 15,121 | 10,612 | 14,210 | 10,009 |
| Horses | | 680 | | 441 | | 200 | | 200 | | 100 | | 100 |
| Sheep | | 84 | | 71 | | 85 | | 85 | | 85 | | 85 |
| Goats | | 23 | | 12 | | 15 | | 15 | | 10 | | 10 |
| Total | | 10,365 | | 9,980 | | 10,645 | | 10,239 | | 10,807 | | 10,204 |
| Hogs[2] | 12,023 | | 13,063 | | 15,692 | | 15,692 | | 17,262 | | 17,262 | |
| Broilers | 3,520 | | 7,393 | | 23,366 | | 23,366 | | 39,773 | | 39,773 | |
| Laying hens | 57,300 | | 62,450 | | 82,200 | | 82,200 | | 84,700 | | 84,700 | |

[1] A livestock unit is a animal weighing 500 kilograms. The following are the equivalent units for various livestock classes: horses under 3 years--0.70; horses 3 years and over--1.10; cows and young cattle over 2 years--1.00; oxen and bulls--1.20; cattle 1-2 years--0.70; cattle under 1 year--0.30; hogs weighing over 75 kilograms--0.20; pigs--0.02; feeder pigs--0.06; slaughter hogs--0.06; sows and boars--0.30; sheep under 1 year--0.05, sheep over 1 year--0.10; and goats--0.08.
[2] Excluding pigs under 8 weeks.

Table 5.--West Germany: Production of livestock and livestock products, average 1961/62 - 1963/64 (base period), 1964/65 and 1970 and 1975 projected

| Product | Base period | 1964/65 | 1970 | | 1975 | |
|---|---|---|---|---|---|---|
| | | | I | II | I | II |
| | *1,000 tons* | | | | | |
| Meat:[1] | | | | | | |
| Oxen | 36.0 | 34.1 | 40.9 | 40.9 | 40.9 | 40.9 |
| Bulls | 339.1 | 358.9 | 572.0 | 508.3 | 727.2 | 642.7 |
| Cows | 325.6 | 325.1 | 326.8 | 321.8 | 338.4 | 327.6 |
| Heifers | 201.0 | 188.3 | 227.7 | 226.3 | 225.5 | 213.7 |
| Beef, total | 901.7 | 906.4 | 1,167.4 | 1,097.3 | 1,332.0 | 1,224.9 |
| Veal | 97.8 | 99.3 | 116.7 | 116.7 | 120.7 | 120.7 |
| Pork | 1,667 | 1,925 | 2,440 | 2,440 | 2,760 | 2,760 |
| Poultrymeat | 110.7 | 146.0 | 272.8 | 272.8 | 382.5 | 382.5 |
| Whole milk[2] | 7,731 | 7,672 | 8,400 | 8,400 | 8,686 | 8,686 |
| Whey and fresh cheese | 153 | 182 | 246 | 246 | 299 | 299 |
| Cheese | 164 | 176 | 193 | 193 | 202 | 202 |
| Whole milk, powdered | 32 | 43 | 80 | 80 | 102 | 102 |
| Butter | 464 | 495 | 563 | 526 | 611 | 551 |
| Eggs[3] | 8,716 | 11,591 | 16,430 | 16,430 | 17,789 | 17,789 |

[1] Excluding slaughter fats. [2] Including cream, curdled milk products, evaporated and condensed milk, skim milk, and buttermilk. [3] Million eggs.

Table 6.--West Germany: Agricultural land utilization, average 1961/62 - 1963/64 (base period), 1964, 1966 and 1970 and 1975 projected

| Land use | Base period | | 1964 | | 1966 | |
|---|---|---|---|---|---|---|
| | *1,000 ha.* | *Percent* | *1,000 ha.* | *Percent* | *1,000 ha.* | *Percent* |
| Agricultural area | 14,215 | 100 | 14,133 | 100 | 14,030 | 100 |
| Special crops[1] | 688 | 4.9 | 680 | 4.8 | 709 | 5.1 |
| Permanent grassland[2] | 5,618 | 39.5 | 5,621 | 39.8 | 5,712 | 40.7 |
| Cropland | 7,909 | 55.6 | 7,832 | 55.4 | 7,609 | 54.2 |
| Total grain | 4,901 | 34.5 | 4,998 | 35.4 | 4,939 | 35.2 |
| Wheat | 1,371 | 9.6 | 1,447 | 10.2 | 1,389 | 9.9 |
| Rye[3] | 1,265 | 8.9 | 1,201 | 8.5 | 1,066 | 7.6 |
| Barley | 1,079 | 7.6 | 1,153 | 8.2 | 1,288 | 9.2 |
| Oats[4] | 1,186 | 8.3 | 1,197 | 8.5 | 1,196 | 8.5 |
| Potatoes | 993 | 7.0 | 851 | 6.0 | 732 | 5.2 |
| Sugar beets | 281 | 2.0 | 327 | 2.3 | 294 | 2.1 |
| Fodder crops[5] | 1,469 | 10.3 | 1,366 | 9.7 | 1,350 | 9.6 |
| Vegetables[6] | 72 | 0.5 | 91 | 0.6 | 81 | 0.6 |
| Industrial crops[7] | 110 | 0.8 | 127 | 0.9 | 124 | 0.9 |
| Fallow and grassland for green manure | 83 | 0.6 | 72 | 0.5 | 89 | 0.6 |

| Land use | 1970/I | | 1970/II | | 1975/I | | 1975/II | |
|---|---|---|---|---|---|---|---|---|
| | *1,000 ha.* | *Pct.* | *1,000 ha.* | *Pct.* | *1,000 ha.* | *Pct.* | *1,000 ha.* | *Pct.* |
| Agricultural area | 13,767 | 100 | 13,767 | 100 | 13,504 | 100 | 13,504 | 100 |
| Special crops[1] | 688 | 5.0 | 688 | 5.0 | 688 | 5.1 | 688 | 5.1 |
| Permanent grassland[2] | 5,715 | 41.5 | 5,715 | 41.5 | 5,620 | 41.6 | 5,620 | 41.6 |
| Cropland | 7,364 | 53.5 | 7,364 | 53.5 | 7,196 | 53.3 | 7,196 | 53.3 |
| Total grain | 4,933 | 35.9 | 5,071 | 36.9 | 4,997 | 37.0 | 5,196 | 38.5 |
| Wheat | 1,480 | 10.8 | 1,521 | 11.1 | 1,549 | 11.5 | 1,611 | 11.9 |
| Rye[3] | 937 | 6.8 | 964 | 7.0 | 750 | 5.6 | 779 | 5.8 |
| Barley | 1,382 | 10.0 | 1,420 | 10.3 | 1,599 | 11.8 | 1,663 | 12.3 |
| Oats[4] | 1,134 | 8.3 | 1,166 | 8.5 | 1,099 | 8.1 | 1,143 | 8.5 |
| Potatoes | 705 | 5.1 | 760 | 5.5 | 550 | 4.1 | 625 | 4.6 |
| Sugar beets | 300 | 2.2 | 300 | 2.2 | 288 | 2.1 | 288 | 2.1 |
| Fodder crops[5] | 1,124 | 8.2 | 931 | 6.8 | 1,049 | 7.8 | 775 | 5.8 |
| Vegetables[6] | 72 | 0.5 | 72 | 0.5 | 72 | 0.5 | 72 | 0.5 |
| Industrial crops[7] | 130 | 0.9 | 130 | 0.9 | 140 | 1.0 | 140 | 1.0 |
| Fallow and grassland for green manure | 100 | 0.7 | 100 | 0.7 | 100 | 0.8 | 100 | 0.8 |

[1] Vegetable gardens, vineyards, orchards, tree nurseries, basket willow areas, and litter meadows. [2] Excluding litter meadows. [3] Including winter meslin. [4] Including summer meslin and corn. [5] Including fodder root crops. [6] Market production, including vegetables from hothouses. [7] Including pulses.

Table 7.--West Germany: Crop production, average 1961/62 - 1963/64 (base period), 1964/65 and 1970 and 1975 projected

| Crop | Base period | 1964/65 | 1970 | | 1975 | |
|---|---|---|---|---|---|---|
| | | | I | II | I | II |
| | *1,000 tons* | | | | | |
| Wheat | 4,531 | 5,203 | 6,012 | 6,183 | 6,888 | 7,161 |
| Rye and winter meslin | 3,279 | 3,785 | 2,708 | 2,785 | 2,253 | 2,342 |
| Summer barley | 2,337 | 2,699 | 3,306 | 3,397 | 3,812 | 3,966 |
| Winter barley | 892 | 1,216 | 1,521 | 1,563 | 1,920 | 1,996 |
| Oats | 2,141 | 2,308 | 1,851 | 1,900 | 1,709 | 1,776 |
| Summer meslin | 1,208 | 1,339 | 1,299 | 1,336 | 1,403 | 1,459 |
| Early potatoes[1] | 989 | 1,070 | 720 | 720 | 540 | 540 |
| Late potatoes | 22,725 | 19,554 | 17,955 | 19,440 | 14,560 | 16,660 |
| Edible pulses | 13 | 10 | 13 | 13 | 14 | 14 |
| Sugar beets | 10,761 | 12,863 | 12,474 | 12,474 | 12,407 | 12,407 |
| Oil crops | 87 | 109 | 145 | 145 | 153 | 153 |
| Hops | 15 | 18 | 17 | 17 | 18 | 18 |
| Tobacco[2] | 10 | 10 | 13 | 13 | 13 | 13 |
| Wine[3] | 4,978 | 7,185 | 4,596 | 4,596 | 4,596 | 4,596 |
| Fodder crops[4] | 3,947 | 3,263 | 3,181 | 2,634 | 3,094 | 2,286 |
| Permanent grassland[5] | 12,128 | 10,780 | 13,316 | 13,236 | 13,657 | 13,530 |

[1] Including corn. [2] Dried weight. [3] 1,000 hectoliters. [4] Including fodder root crops. [5] 1,000 tons of starch units.

Table 8.--West Germany: Domestic production and import requirements of feeds, average 1961/62-1963/64 (base period), 1964/65 and 1970 and 1975 projected

| Feeds and feed components | Base period | 1964/65 | 1970 | | 1975 | |
|---|---|---|---|---|---|---|
| | | | I | II | I | II |
| | *1,000 tons* | | | | | |
| Cereal grains | 3,468 | 3,524 | 4,146 | 4,273 | 4,542 | 4,721 |
| Feed grains | 4,825 | 5,757 | 5,564 | 5,738 | 6,345 | 6,626 |
| Potatoes | 11,505 | 11,193 | 8,978 | 10,207 | 6,515 | 8,259 |
| Sugar beets | 320 | 133 | 374 | 374 | 372 | 372 |
| Sugar beet pulp | 1,089 | 1,047 | 1,310 | 1,310 | 1,303 | 1,303 |
| Bran | 726 | 769 | 649 | 649 | 618 | 618 |
| Permanent pasture | 12,128 | 11,248 | 13,316 | 13,236 | 13,657 | 13,530 |
| Other feed crops | 3,947 | 2,795 | 3,181 | 2,634 | 3,094 | 2,286 |
| Oilcake | 44 | 52 | 78 | 78 | 98 | 98 |
| Fish and meat meal | 101 | 115 | 131 | 131 | 145 | 145 |
| Whole milk | 1,925 | 1,881 | 1,925 | 1,925 | 1,925 | 1,925 |
| Skim milk and buttermilk | 7,646 | 8,448 | 8,882 | 8,125 | 9,423 | 8,230 |
| Miscelloneous[1] | 2,226 | 2,110 | 2,220 | 2,220 | 2,195 | 2,195 |
| Total feed production: | | | | | | |
| Starch units | 28,969 | 27,811 | 30,226 | 29,988 | 30,842 | 30,487 |
| Digestible protein | 4,192 | 3,980 | 4,462 | 4,343 | 4,562 | 4,429 |
| Import requirements: | | | | | | |
| Starch units | 3,304 | 4,457 | 7,413 | 6,743 | 8,210 | 7,172 |
| Digestible protein | 958 | 1,343 | 1,770 | 1,726 | 2,054 | 1,943 |

[1] In terms of 1,000 tons of starch units including potato, vegetable and processed byproducts, feed crops between row crops, straw, pulses, whey, and goat's milk.

Table 9.--West Germany: Supply and utilization of agricultural products, average 1961/62 - 1963/64 (base period), and 1970 and 1975 projected

| Commodity and alternative | Base period--1961/62-1963/64 | | | | 1970 | | | | 1975 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total consumption | Domestic production | Net imports | Degree of self-sufficiency | Total consumption | Domestic production | Net imports | Degree of self-sufficiency | Total consumption | Domestic production | Net imports | Degree of self-sufficiency |
| | *1,000 tons* | | | *Percent* | *1,000 tons* | | | *Percent* | *1,000 tons* | | | *Percent* |
| Wheat I | 6,036 | 4,531 | 1,738 | 71 | 6,662 | 5,402 | 1,260 | 81 | 7,133 | 5,964 | 1,169 | 84 |
| Wheat II | – | – | – | – | 6,752 | 5,552 | 1,200 | 82 | 7,270 | 6,202 | 1,068 | 85 |
| Rye and winter mixed grain I | 3,666 | 3,279 | 200 | 95 | 3,223 | 2,858 | 365 | 89 | 2,899 | 2,400 | 499 | 83 |
| Rye and winter mixed grain II | – | – | – | – | 3,278 | 2,940 | 338 | 90 | 2,967 | 2,493 | 474 | 84 |
| Brewer's barley I | 1,641 | 1,097 | [1] 544 | 67 | 2,156 | 1,488 | 668 | 69 | 2,529 | 1,731 | 798 | 68 |
| Brewer's barley II | – | – | – | – | 2,156 | 1,528 | 628 | 71 | 2,529 | 1,800 | 729 | 71 |
| Coarse and industrial grain[2] I | 7,525 | 5,482 | 2,442 | 73 | 12,454 | 6,854 | 5,600 | 55 | 13,575 | 7,775 | 5,800 | 57 |
| Coarse and industrial grain[2] II | – | – | – | – | 11,667 | 7,047 | 4,620 | 60 | 12,536 | 8,086 | 4,450 | 65 |
| Bran | 1,226 | 726 | 500 | 59 | 1,149 | 649 | 500 | 56 | 1,118 | 618 | 500 | 55 |
| Rice | 111 | – | 111 | – | 123 | – | 123 | – | 127 | – | 127 | – |
| Pulses, edible | 92 | 13 | 81 | 14 | 108 | 13 | 95 | 12 | 112 | 14 | 98 | 13 |
| Potatoes I | 23,873 | 23,713 | 355 | 99 | 18,675 | 18,675 | – | 100 | 15,100 | 15,100 | – | 100 |
| Potatoes II | – | – | – | – | 20,160 | 20,160 | – | 100 | 17,200 | 17,200 | – | 100 |
| Sugar | 1,718 | 1,501 | 164 | 87 | 1,936 | 1,936 | – | [3] 100 | 2,046 | 2,046 | – | [3] 100 |
| Vegetables[4] | 3,190 | 2,366 | 824 | 74 | 3,240 | 2,366 | 874 | 73 | 3,404 | 2,366 | 1,038 | 70 |
| Fruits[4] | 4,252 | 3,121 | 1,131 | 73 | 4,832 | 3,121 | 1,711 | 65 | 5,366 | 3,121 | 2,245 | 58 |
| Citrus fruit | 861 | – | 861 | – | 1,112 | – | 1,112 | – | 1,258 | – | 1,258 | – |
| Fats and oils[5] | 698 | 42 | 651 | 6 | 756 | 47 | 703 | 6 | 781 | 50 | 731 | 6 |
| Oilcake I | 1,913 | 44 | 1,869 | 2 | 3,448 | 78 | 3,370 | 2 | 4,028 | 98 | 3,930 | 2 |
| Oilcake II | – | – | – | – | 3,538 | 78 | 3,460 | 2 | 3,978 | 98 | 3,880 | 3 |
| Wine and wine derivates[6] | 8,764 | 4,978 | 3,865 | 57 | 12,228 | 4,596 | 7,632 | 38 | 14,485 | 4,596 | 9,889 | 32 |
| Tobacco[7] | 124 | 10 | 106 | 8 | 166 | 13 | 153 | 8 | 184 | 13 | 171 | 7 |
| Cotton[8] | 326 | – | 326 | – | 332 | – | 332 | – | 343 | – | 343 | – |
| Tapioca | 300 | – | 300 | – | 600 | – | 600 | – | 800 | – | 800 | – |
| Beef[9] I | 1,048 | 902 | 155 | 86 | 1,370 | 1,167 | 203 | 85 | 1,506 | 1,332 | 174 | 88 |
| Beef[9] II | – | – | – | – | 1,370 | 1,097 | 273 | 80 | 1,506 | 1,225 | 281 | 81 |
| Veal[9] | 110 | 98 | 12 | 89 | 117 | 117 | – | [3] 100 | 121 | 121 | – | [3] 100 |
| Pork[9] | 1,764 | 1,667 | 95 | 95 | 2,218 | 2,440 | –222 | [3] 110 | 2,510 | 2,760 | –250 | [3] 110 |
| Poultrymeat[9] | 284 | 111 | 173 | 39 | 455 | 273 | 182 | [3] 60 | 546 | 383 | 163 | [3] 70 |
| Eggs[10] | 13,360 | 8,716 | 4,644 | 65 | 16,430 | 16,430 | – | [3] 100 | 17,789 | 17,789 | – | [3] 100 |
| Milk for consumption[11] | 7,755 | 7,731 | 24 | 100 | 8,424 | 8,400 | 24 | 100 | 8,710 | 8,686 | 24 | 100 |
| Whey cheese and fresh cheese | 155 | 153 | 2 | 99 | 246 | 246 | – | 100 | 299 | 299 | – | 100 |
| Cheese I | 257 | 164 | 93 | 64 | 295 | 193 | 102 | [3] 65 | 311 | 202 | 109 | [3] 65 |
| Cheese II | – | – | – | – | 295 | 193 | 102 | [3] 65 | 311 | 202 | 109 | [3] 65 |
| Butter[12] I | 496 | 464 | 32 | 94 | 522 | 563 | –41 | 108 | 540 | 611 | –71 | 113 |
| Butter[12] II | – | – | – | – | 522 | 526 | –4 | 101 | 540 | 551 | –11 | 102 |
| Whole milk, powdered | 47 | 32 | 14 | 70 | 80 | 80 | – | [3] 100 | 102 | 102 | – | 100 |
| Fish and meat meal | 381 | 101 | 280 | 27 | 731 | 131 | 600 | 18 | 945 | 145 | 800 | 15 |

[1] Including imports of brewer's malt in grain equivalent. [2] Excluding brewer's barley. [3] Degree of self-sufficiency for projection fixed. [4] Including output produced and consumed on farms and home gardens. [5] In terms of pure fat, including animal fats. [6] 1,000 hectoliters. [7] Dried weight. [8] Million tons. [9] Excluding slaughter fats. [10] Million pieces. [11] Including cream, curdled milk products, evaporated and condensed milk, skim and buttermilk (in whole milk equivalent). [12] In terms of product weight.

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